



## CTSO Course Alignments: Principles of Food Production

Below you will find standards for the Principles of Food Production course aligned with competitive events from appropriate career and technical student organizations (CTSOs). Knowing the aligned events for your organization will allow you to have additional tools for teaching course standards, as well as increase student engagement and preparation in your CTSO activities. The final column recommends potential tools from other CTSO organizations. Even if your students are not participating in these organizations, available rubrics, tools, and materials can also add to the instructional resources at your disposal for best teaching your content.

**Important to note:** While the aligned activities below can be important tools in teaching course standards, it is important to note that events may not cover a standard in its entirety and should not be the sole instructional strategy used to address a standard.

	STANDARD	ALIGNED FFA COMPETITIVE EVENTS/PROGRAMS	OTHER POTENTIAL CTSO TOOLS & RESOURCES
1	Research the roles and contributions of plants and animals in meeting the food and fiber needs of society using government agency data, news articles, and instructional resources. Identify and describe in an informative text the different aspects of plant and livestock production (such as product selection, site selection, optimal development, harvesting, and marketing), and examine characteristics of occupations in the field. (TN Reading 1; TN Writing 2)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Issues</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Advocacy</li> <li>• <b>HOSA:</b> Job Seeking Skills</li> <li>• <b>TSA:</b> Career Preparation</li> </ul>
2	Review common laboratory safety procedures for tool and equipment operation in the agricultural and biosystems engineering laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3; ARNR CS)		<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Biomedical Laboratory Science</li> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> <li>• <b>TSA:</b> Biotechnology Design</li> </ul>
3	Review common laboratory safety procedures for tool and equipment operation in the food science laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3)		<ul style="list-style-type: none"> <li>• <b>SkillsUSA:</b> Occupational Health and Safety</li> </ul>

4	Differentiate between major plant species used for vegetable, forage, fruit, and agronomic crop production. Describe basic principles of plant science needed to produce healthy crops for high quality food products. (TN Biology II 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy</li> </ul>	
5	<p>Identify and describe the general growth and development processes of crops used for food production. Synthesize information from a range of sources to analyze plant anatomy, physiology, genetics, and reproduction in the context of plant growth and productivity, including the following:</p> <p>a. Describe different plant types based on their anatomy and physiology</p> <p>b. Investigate the relationship between form and function for the major plant structures</p> <p>c. Examine the components of the plant reproduction system and identify specific anatomical features on different species and varieties of plants</p> <p>d. Demonstrate cross-breeding techniques to enhance identified traits and characteristics</p> <p>(TN Reading 7, 9; TN Writing 8; TN Biology II 7)</p>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agriscience Fair</li> </ul>	<ul style="list-style-type: none"> <li>• <b>TSA:</b> Essays on Technology</li> </ul>
6	Relate principles of disease and parasite control to the health, growth, and maintenance of food crops. Compare and contrast methods for disease and parasite controls, distinguishing between prevention and treatment methods. (TN Biology II 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Extemporaneous Writing, Prepared Speaking</li> <li>• <b>TSA:</b> Extemporaneous Presentation, Prepared Presentation</li> </ul>
7	Document, using either a chart, table, graph or graphic organizer, the optimum levels of specific nutritional factors that influence plant health (such as pH, nitrogen, potassium, etc.). Identify nutritional deficiencies and disorders and make recommendations for the safe production of major food crops. (TN Reading 7; TN Biology II 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy</li> </ul>	<ul style="list-style-type: none"> <li>• <b>TSA:</b> Desktop Publishing</li> </ul>
8	Evaluate the physical and chemical properties of soils needed for optimum food crop production. Perform technical procedures to classify soils for agricultural production by evaluating factors such as soil pH, texture, permeability, drainage class, soil depth, and water holding capacity. Interpret test results and formulate conclusions regarding production use suitability. (TN Reading 3)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy, Land Evaluation</li> </ul>	
9	Research the factors that influence soil erosion rates, and compare soil conservation practices used for maintaining a healthy growing environment for plant and animal production. (TN Writing 7; TN Environmental Science 4)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy, Land Evaluation</li> </ul>	

10	Analyze practices for land selection and conservation that ensure optimal productivity in crop development and livestock operations. Using information from government agencies (such as Tennessee Extension Service, Natural Resources Conservation Service), cite examples of best management practices that ensure the appropriate use of land resources and maximize crop yields and determine the extent to which evidence provided supports them. (TN Reading 8; TN Writing 9; TN Environmental Science 4, 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Communications, Agronomy, Land Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Prepared Speaking, Researched Persuasive Speaking</li> <li>• <b>TSA:</b> Prepared Presentation</li> </ul>
11	Identify environmental factors (such as climate and topography) considered in site selection to ensure optimal production and economic return for plant and animal production, depending on intended use and location (rural, suburban, and urban). (TN Environmental Science 4)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy, Land Evaluation</li> </ul>	
12	Research sustainable practices and principles applicable to food crop and animal production. Craft an argumentative essay recommending management practices for a specific setting (rural, suburban, urban) by developing a claim with reasoning and evidence that incorporate soil and water conservation principles. (TN Writing 1, 4, 7; TN Ecology 6; TN Environmental Science 4, 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agronomy, Environmental and Natural Resources, Land Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Advocacy, Environmental Ambassador</li> <li>• <b>HOSA:</b> Researched Persuasive Speaking</li> </ul>
13	Debate water, air, and noise pollution issues associated with agricultural production, and recommend control measures for rural, suburban, and urban areas, citing evidence from specific case studies. Demonstrate adherence to procedures for handling, storing, and disposing of production waste in compliance with relevant laws and regulations in a variety of plant and animal settings. (TN Reading 3; TN Writing 1; TN Environmental Science 6, 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Environmental and Natural Resources</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Advocacy, Environmental Ambassador</li> <li>• <b>HOSA:</b> Biomedical Debate</li> <li>• <b>TSA:</b> Debating Technological Issues</li> </ul>
14	Identify the major breeds of production animals (such as cattle, sheep, goats, poultry, swine, and specialty animals) and their associated food and fiber products, citing specific textual evidence of characteristics. Explore the basic principles of animal science needed to produce healthy livestock for high quality food and fiber products (such as nutrition, reproduction, and breed selection). (TN Reading 1; TN Writing 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Dairy Cattle Management and Evaluation, Livestock Evaluation, Poultry Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Veterinary Science</li> </ul>
15	Identify and describe the general growth and development processes of production animals used for food and fiber production. Analyze animal anatomy, physiology, genetics, and reproduction in the context of animal growth and productivity, including the following: a. Describe different animal types based on their anatomy and physiology b. Examine the components of the animal reproduction system and identify specific anatomical features on different species and varieties of production animals c. Demonstrate understanding of cross-breeding techniques to enhance identified traits and characteristics (TN Reading 9; TN Writing 8)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Dairy Cattle Management and Evaluation, Livestock Evaluation, Poultry Evaluation</li> </ul>	

16	Research principles of disease and parasite control and relate them to livestock health, growth, and maintenance. Recommend safe methods for disease and parasite prevention and treatment, citing established scientific and industry guidelines. (TN Reading 2, 8; TN Writing 7, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking</li> </ul>
17	Use professional and academic journals and/or publications from UT and TSU Cooperative Extension Service to research and document connections between proper nutrition and animal health. Apply principles of proper nutrition to maximize livestock gains and cost efficiency, by: <ol style="list-style-type: none"> <li>a. Making specific diet recommendations, based on animal breed, available resources, costs, and nutritional requirements and justifying recommendations with specific textual evidence</li> <li>b. Differentiating between various diet alternatives to determine which ration is most cost effective to obtain maximum production</li> </ol> (TN Reading 1, 4, 5; TN Writing 1, 7, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Veterinary Science</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Researched Persuasive Speaking</li> </ul>
18	Summarize how heritability, selection intensity, and generation interval are important to genetic change in production animals, including: <ol style="list-style-type: none"> <li>a. Explaining how each concept impacts genetic change</li> <li>b. Comparing and contrasting characteristics of each as a tool for animal producers</li> <li>c. Determining how long it will take to get specific traits, using each method</li> </ol> (TN Reading 1, 2; TN Writing 8, 9; TN Biology I 4, TN Biology II 4)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agriscience Fair</li> </ul>	<ul style="list-style-type: none"> <li>• <b>HOSA:</b> Extemporaneous Writing, Prepared Speaking</li> <li>• <b>TSA:</b> Prepared Presentation, Extemporaneous Presentation</li> </ul>
19	Identify and critique factors that influence the economics of crop and livestock production in the United States and the world. Using informational texts and graphic illustrations published by government agencies, interpret production costs for various types of plant and animal operations that impact the wholesale cost of food. (TN Reading 4; TN Writing 2, 9)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Food Science and Technology</li> </ul>	
20	Using local news media, advertisements, and information from production companies, explore and compare marketing methods and strategies to develop opportunities for specialty plant and animal products in niche markets. (TN Reading 1, 6, 8)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Marketing Plan</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DECA:</b> Food Marketing Series, Restaurant and Food Service Series</li> <li>• <b>FBLA:</b> Marketing</li> </ul>
21	Identify and describe the American factors impacting global commodity markets. Compare and contrast, through debate, different factors that impact food prices in specific scenarios (such as the impact of a war, economic sanctions, or weather on local food prices). (TN Reading 2, 4)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Issues</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FBLA:</b> Global Business <b>FCCLA:</b> Advocacy</li> <li>• <b>HOSA:</b> Biomedical Debate</li> <li>• <b>TSA:</b> Debating Technological Issue</li> </ul>

<b>22</b>	Examine the role and importance of genetic principles in improving plant and animal production. Summarize the important historical achievements in plant and animal biotechnology. Research current and emerging plant and animal biotechnologies and craft an argumentative essay to debate the use of biotechnology in production agriculture. Justify claims surrounding the ethical, legal, practical, and economic issues related to food production and biotechnology with evidence drawn from scientific and professional resources. (TN Reading 2, 8; TN Writing 1, 7)	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Agricultural Issues</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Advocacy</li> <li>• <b>HOSA:</b> Biomedical Debate, Researched Persuasive Speaking, Prepared Speaking</li> <li>• <b>TSA:</b> Biotechnology Design, Debating Technological Issues</li> </ul>
<b>ALL</b>	<b>CAN BE USED WITH ALL/MOST STANDARDS</b>	<ul style="list-style-type: none"> <li>• <b>FFA:</b> Food Science and Technology</li> </ul>	<ul style="list-style-type: none"> <li>• <b>FCCLA:</b> Illustrated Talk, Chapter in Review Display, Chapter in Review Portfolio</li> <li>• <b>SkillsUSA:</b> Career Pathways Showcase, Job Skills Demonstration A, Job Skills Demonstration O, Prepared Speech, Extemporaneous Speaking, Chapter Display</li> </ul>